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ABSTRACT

The question explored in this report is whether electronic networks are effective tools for creating and sustaining reflective teacher communities. Over the past two decades, computer mediated communication (CMC) technologies have been used in a variety of efforts aimed at fostering teacher learning and teacher collaboration. A study sought to closely examine the literature on the use of electronic networks for creating reflective teacher communities. Limiting the analysis to those publications that addressed at least some aspect of teacher discourse supported by telecommunications yielded approximately 50 papers, and after eliminating those papers of general discussion of electronic networks, 28 papers were left. It was found that many teacher networks pursued the goal of building learning and reflective communities for teachers, and much was expected out of these networks, both as a practical solution to the stubborn problems in teacher professional development and as a new agent to create what is difficult to realize in face-to-face situations. However, it was also found that there is a general lack of rigorous research on the subject. Little is known about the effectiveness of CMC for teacher learning. Few researchers have seriously examined the degree to which these networks indeed were "communities" that promoted reflective discourses. (Contains 54 references and 3 tables of data.) (NKA)

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CIERA REPORT

A Critical Review of the Literature on Electronic Networks as Reflective Discourse Communities for Inservice Teachers

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CIERA Inquiry 3: Policy and Profession
Are electronic networks effective tools for creating and sustaining reflective teacher comunities?

Over the past two decades, computer mediated communication (CMC) technologies have been used in a variety of efforts aimed at fostering teacher learning and teacher collaboration. This study is an attempt to closely examine the literature on the use of electronic networks for creating reflective teacher communities. We found that many teacher networks pursued the goal of building learning and reflective communities for teachers, and much was expected out of these networks, both as a practical solution to the stubborn problems in teacher professional development and as a new agent to create what is difficult to realize in face-to-face situations. However, we found a general lack of rigorous research on the subject. Little is known about the effectiveness of CMCs for teacher learning. Few researchers have seriously examined the degree to which these networks indeed were "communities" that promoted reflective discourses.

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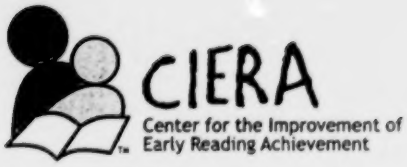

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A Critical Review of the Literature on Electronic Networks as Reflective Discourse Communities for Inservice Teachers

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Introduction

Over the past two decades, computer mediated communication (CMC) technologies have been used in a variety of efforts aimed at fostering teacher learning and teacher collaboration (Huberman, 1995; Levin, Waugh, Brown, & Clift, 1994; US Congress Office of Technology Assessment, 1995; Willis & Mehlinger, 1996). A quick browse through this literature is sure to uncover glowing reports of the power of electronic teacher networking. However, a closer look at the claims and the research in this area raises far more questions than it answers. The claims about the power of CMC and teacher professional development raise even more questions when we consider the finding of a recent national survey: despite the fact that over 90% of teachers had access to the Internet, only 16% communicated by e-mail with teachers from other schools as often as five times during the school year (Becker, 1999). Why don't more teachers reap the claimed benefits of the Internet as a communication tool that enables them to engage in conversations with their colleagues as the literature would suggest?

This study is an attempt to closely examine the literature on the use of electronic networks for creating reflective teacher communities. We hope such examination will lead us to a realistic appraisal of what we actually know about the effects of telecommunications and teacher networks, and of what we need to know in order to make thoughtful decisions about such networks as resources for teacher professional development. The study was guided by five questions. First, why were electronic networks developed for teacher professional development? Second, what beliefs about the benefits of electronic teacher networks for professional development are evidenced by the goals of the networks? Third, to what extent were these claims evalu-

ated in the literature? What criteria and evidence were used? Fourth, to what extent were the claimed benefits realized? And last, what factors (e.g., technological and social arrangements, and participants' cognitive and affective characteristics) seem to be related to the degree of success or failure?

Methodology

In order to assure a thorough survey of the field, we initially identified literature that looked at teachers involved in any kind of electronic networking, as well as research which seemed to describe the kinds of communication processes supported or fostered by electronic formats. Using First Search, with additional double-checking with WebSPIRS, we searched the ERIC and Education Abstracts for the following search terms: teacher networks, computer-mediated communication, electronic community, virtual communities, electronic professional development, teachers and E-mail, teacher discourse, reflection, computers and networks, computer networks, computers and professional development, and electronic networks. Follow-up searches used author and network names identified in the initial search. In addition, we used the World Wide Web to search for further information on networks identified in the search for print material. The result of this search was a body of several hundred papers. From these we eliminated those which addressed three areas outside our parameters: 1) work that addressed teacher networks but without electronic communication, 2) networks designed to connect students and teachers across P-12 classrooms for collaborative subject matter projects, and 3) literature focused on pre-service teacher education—a field impressively examined by Blanton, Moorman, and Trathen (1998)—or graduate course work in education.

Limiting our analysis to those publications that addressed at least some aspect of teacher discourse supported by telecommunications left approximately 50 papers. After then eliminating those papers that discussed electronic teacher networks in a general way, rather than discussing a specific network, we were left with 28 papers. These 28 papers describe 14 networks that ranged from small local efforts to huge national projects, and from early, pioneering ventures to very recent and current undertakings. Each of these was then analyzed according to the criteria established in the five research questions.

Results

Question 1: Why Electronic Teacher Networks?

Teacher reflection has long been identified as a vital tool for professional development and ultimately for educational reform (Richardson, 1990;

1994). Growing understanding about the role of social and cultural processes in human learning has emphasized the vital role of discourse in this process of reflection. However, despite this general understanding of the importance of reflective discourse to teacher change and improvement, a commonplace of the field is the recognition that the work of teaching occurs in contexts which are antagonistic to the conditions that foster both reflection and discourse (Little, 1990). Reflection requires time—a teacher's most limited commodity—while discourse is by definition a communal practice, limited by the isolating nature of teaching (Lortie, 1975; Jackson, 1986). Beyond physical isolation is the longstanding traditional perception of the private, individual nature of teaching (Little, 1990). Even recent trends toward teacher collaboration do little to create contexts for reflective discourse. Teacher interaction in these settings is shaped by the pressures of concrete planning and teaching and rarely allows for the kinds of time and freedom that encourage reflection. In addition, these collaborative interactions themselves are still relatively infrequent. Circumstances for the majority of teachers remain as Sarason (1982) observed more than 15 years ago: "teachers are relatively autonomous in their classrooms and within a school they have surprisingly little to do with each other" (p. 141).

Innovations are solutions to perceived problems. The reasons that CMC technologies have been used for teacher professional development are closely related to the challenges in helping teachers to become better professionals. CMC technologies have been identified as a way to address the problems associated with isolation. The two characteristics of CMC technologies that have been most frequently promoted in the literature as having the potential to counter the difficulties in teacher professional development are their power to transcend *time* and *space*. The asynchronous nature of CMC enables teachers to participate in a discourse community at any time of the day, thus alleviating some of the time pressures teachers face. CMC technology's capacity to enable communication across distance is believed to have the potential to provide teachers with collaborators or professional colleagues beyond their immediate physical situation.

Furthermore, CMC technologies are believed to have the potential to individualize professional development. Professional development programs have traditionally met with very mixed reviews from teachers, who often feel frustrated over having to spend precious time on activities they consider inappropriate for their needs. Telecommunications technology offers opportunities for individualized professional development activities in which teachers can interact with colleagues who share their particular interests and needs in contexts which can be shaped to fit their own scheduling preferences. Weir (1992) suggests that for teachers whose professional development may be inhibited by limited contact with "more capable peers" (Vygotsky, 1978, p.86), electronic environments may provide a context for expanding their zone of proximal development.

In addition, the affordances of telecommunications technology may encourage the reflection needed for long-term teacher growth in several ways. Written interaction allows time to carefully shape discourse. This may encourage reflection and enable participation for some teachers who resist the pace of face-to-face exchange. Network interactions also offer various degrees of anonymity. For some individuals this may encourage a freedom of expres-

sion and comfort level that allows them to address issues that they may not feel free to share with school colleagues (Hawkes, 1997; Zhao, 1998).

Question 2: What Claims Were Made For the Effects Of The Network?

What are the claimed benefits of electronic teacher networks? To answer this question, we looked at the goals and objectives of the teacher networks. We found that the networks fall into three groups, each with a different set of goals. The first group are those networks with primarily concrete, content-oriented or activity-focused purposes. These are designed to reduce geographical isolation, provide instructional resources, transmit information, introduce teachers to technology, and organize or support activities. In other words, to enable information exchange among members of a network is the primary goal of this group of networks. Four of the fourteen networks we examined fall into this category. The second group are those with transformative purposes. They are designed to help develop new understandings and provide support for individual professional growth. The primary goal of these networks is to encourage pedagogical changes in participating teachers' practices. Three of the fourteen networks fall into this category. The third group are those specifically designed to create or support reflective discourse communities. Six networks out of the 14 we reviewed belong to this category. Table 1 summarizes the distribution of the networks by goals.

Table 1: Distribution of Networks by Goals

Share Information	Foster Professional Development	Create Communities
1. The Electronic Information Exchange System (EIES) (Kimmel, 1988)	1. Beginning Teacher Computer Network (BTCN) (Merseth, 1991)	1. Lambda Community (Sivan, 1997)
2. Rural Telecomputing Initiative (Yap, 1997)	2. PBS Mathline (Cole, 1996; Kimbal, 1995; Rockman, 1995, 1996; Svec, 1997)	2. Rural Learning Network (Pomeroy, 1997)
3. School Renewal Network (Castle and Gillingham, 1991; Livingston, 1991; Walters, 1991; Watts and Castle, 1992)	3. Mathematics Learning Forum (McMahon, 1997; Honey, others(?) 1996)	3. Interdisciplinary Teamed Instruction (ITI) (Burns & Mehan, 1997)
4. Rural telecommunication for professional development (Schrum, 1996)		4. Labnet (DiMauro & Gal, 1994; DiMauro, Jacobs, 1995a, 1995b; Muscella, D; DiMauro, 199xx)
		5. TEECH (Teacher Enhancement Electronic Communications Hall) (Falk, 1997)
		6. TappedIn (Schlager & Schank, 1996, 1997; Schlager, Fusco, & Schank, 1998)

Congruent with the stated goals, it was claimed that the networks had a number of positive effects on their participants: they supposedly reduced teacher isolation, enabled cooperative curriculum development, facilitated the dissemination of information, and provided easy access to curricular

materials. All participants realized savings of time and money for the travel that would otherwise have been required to accomplish these goals. The network also connected teachers to "local, national, and global communities of peers and experts," providing links to subject matter Internet resources, providing support for teachers and students in using community-based projects for math and science learning, and providing collaborative research opportunities. The network also supported conversations and "philosophical" discussions in addition to information and practical suggestions, and increased teachers' understanding of the national standards. Finally, it was claimed that networks provided emotional support for their participants and encouraged the feeling of belonging to a group.

About 78% of the networks have claimed or assumed in one form or another that one of their goals was to create a "community" or that a "community" was created as a result of the network (see Table 2).

Table 2: Networks' Claims of Community or Reflective Discourse[1]

	Community		Reflective Discourse	
Network Name	Yes	No	Yes	No
Beginning Teacher Computer Network (BTCN)		X		X
Electronic Information Exchange System (EIES)		X		X
Interdisciplinary Teamed Instruction (ITI)	X		X	
LABNET	X		X	
Lambda Community	X			X
Mathematics Learning Forum	X		X	
PBS Mathline	X			X
Rural Learning Network	X			X
Rural network "A" (No name given)	X			X
Rural network B: Native American Technology Education Project	X			X
Rural Telecomputing Initiative		X		X
School Renewal Network	X		X	
TappedIn	X		X	
Teacher Enhancement Electronic Communications Hall (TEECH)	X			X
Total	11	3	5	9
Percentage	78%	22%	36%	64%

1. A network is reported to have claimed or assumed "community" or "reflective discourse" when at least one publication about the network claims or assumes "community" or "reflective discourse" as a goal or a result of the network.

The general tendency is to assume that a group of people connected and periodically interacting via some kind of CMC technology constitutes an "on-line" community. Both in the larger body of literature that we initially explored and in the set of papers on the 14 networks we examined, "com-

munity" is a term that generally is used as casually as it is pervasively. Of the networks we studied, only three (Rural Telecomputing Initiative, Beginning Teacher Computer Network, and Electronic Information Exchange System) seem to be completely absent any claims or assumptions that they are communities. For each of the other networks, at least one of the authors writing about it made claims or assumptions about community—either that the network designers were attempting to construct a community or that the participants did indeed constitute a community. Schlager and Schank (1997) describe the designing of TappedIn as the task of creating a "community environment." Cole's (1996) description of the PBS Mathline's Middle School Math Project says, "Groups of 25 or 30 teachers are connected to a learning community that is headed by a facilitator" (p.2); Pomeroy (1997) describes the goal of the Rural Learning Network as "to provide a virtual community for teachers and students from isolated communities where ideas could be exchanged and collaboration could flourish"(p.2). Muscella and DiMauro (1995) refer to the LabNet "community" (p.2) and DiMauro and Gal (1994) discuss LabNet as a "community of practice."

Although these networks were identified as communities, they were not necessarily identified as reflective discourse communities. The number of networks identified as "reflective discourse communities" is much smaller (about 34%). The concept of reflection and discourse as terms for substantive, thoughtful conversations, although not as commonly occurring as ideas of community, do appear repeatedly in the literature. Sivan (1997) includes a description of the "discussorium" of the Lambda Community as a site for reflection. Svec (1997) identifies the encouragement of discourse between teachers as one of the PBS Mathline project goals. Reflective practice (Honey et al., 1994) and reflective dialogue (McMillan, 1995; McMahon, 1997) recur in the literature on the Mathematics Learning Forum. In the literature on the School Renewal Network, Livingston (1991) discusses definitions of reflective discourse and looks for evidence that it is occurring in the context of network interactions. In a paper on the same network, Castle and Gillingham (1991) also discuss the role of reflective discourse in the construction of professional knowledge. Reflection is also a significant issue in the LabNet literature. Gall and DiMauro (1994), in reference to LabNet, identify reflection as one of three modes of network communication, the others being the informative and responsive modes.

Question 3: To What Extent Were the Claims Evaluated?

It is evident that beliefs about benefits shaped the network goals, but it is not common that the subsequent claims were carefully examined in the literature. Of the 28 papers we have used in this research, 8 are most accurately described as project reports rather than research studies (see Table 3 on the following page). These descriptions may present the goals of the network and give us clues about the effectiveness of various configurations of network design, construction and support, but they do not provide a solid base for understanding what these experiences may contribute to teacher change and growth.

Of the 15 papers that we classified as research, many reported research that addressed some peripheral aspect of the network. This may provide some

interesting data, but gives the reader no real sense of the network's overall effectiveness in establishing meaningful teacher interactions. Some reports relied on self-reported (survey) data from participants as evidence to the claimed effects. Most frequently in the discussions of the networks that we examined, authors evaluated interaction by counting numbers of messages, submissions, or individuals participating (Kimmel, 1988; Walters, 1991). Although in a few cases the messages were categorized by type of content, (Pomeroy, 1997), the content was not analyzed as discourse in any formal way.

Table 3: Distribution of Sources and Types of Documents on Networks

	Document Sources		Type of Document	
Journal/book	ERIC Documents[1]	Internet/Author	Research[2]	Project Report
8	12	8	18	10
29%	42%	29%	64%	37%

1 Included in ERIC but not published in journals or books.

2 Research documents differ from project reports in that research documents examine the networks for the purpose of generating new knowledge, while project reports aimed at describing the project/network.

Whether there was truly a community is rarely examined. The general tendency is that as long as there is a group of people "connected" via some kind of CMC technology, an "online" community was said to be established. Of the networks we studied, only four (Rural Network "B", Rural Telecomputing Initiative, Beginning Teacher Computer Network, and the Electronic Information Exchange System) seem to be completely free of ideas of community. For each of the other networks, at least one of the authors writing about it made either claims or assumptions about the network designers' attempt to construct a community, or about the participants constituting a community. However, very few of these networks were subjected to a research process to determine if community did indeed exist; further, there were very limited indications of what community might be, and no concerted effort to define the concept. In most cases the only evidence that could be garnered for the existence of a community was that a number of people were communicating with each other. Only two of the authors (DiMauro, 94& 95b, on LABNet; McMillan, undated, on Mathematics Learning Forum) problematized the issue of community by discussion of how a community is defined or constructed. Only one (McMillan) actually established criteria for community and then examined the network according to those criteria. Additionally, like the term "community," the term "discourse" was generally used without definition and, frequently seemed to be a synonym for conversation of any kind (Svec, 1997).

Question 4: Were the Claimed Benefits Realized?

As suggested in the discussion about Question 2, most of the literature does not provide enough evidence to answer this question in any scientific fashion. In some cases authors made effective cases for specific claims. The more limited and specific the claims, the more likely that they were supported. However, in many cases, broad claims were made without supporting evidence. It is also safe to suggest that not many reflective discourse communi-

ties, in the true sense of the words "reflective," "discourse," and "community," were realized in these efforts.

Question 5: What Factors are Related to the Success of Networks?

Although a lot of time, money, energy and commitment are being spent in trying to use telecommunications to link teachers, it seems apparent that the majority of these efforts are only mildly successful, even on their own terms. Some common factors surface which are necessary but not sufficient conditions for simply getting teachers talking to each other. In this section, we highlight some of these.

Technology

A variety of CMC technologies have been used to support teacher networks. While most networks relied on asynchronous text-based technology such as electronic mail, some networks used synchronous text-based tools (e.g., MOO for TappedIn) or multimedia communication tools. CMC technologies' different interfaces, organizing structures, and access modes should have some impact on the interactions among network members, but none of the papers examined the effect of the different types of technology on network members' participation or discourse.

Teachers' technological proficiency, access to equipment, and the stability of the technology have been reported to influence the success of networks. Several of the networks in this study found that their greater goals were limited or prevented by the teachers' technical difficulties.

Motivation

A second factor affecting the success of networks is teachers' motivation. Teachers must have some reason to talk to each other in the first place. We found that most of the networks were developed by university researchers with support from government agencies or private foundations. Very often the reasons for using the networks were determined by these researchers or project leaders, and not by teachers. Although it is entirely expected and even desirable for university faculty to initiate and support efforts to explore technology's potential to enhance teacher development, the large role that universities play in such projects has significant implications. In spite of everyone's best intentions, there is an implicit tendency for networks to be designed according to researchers'—rather than teachers'—priorities. This can impede the stated goals of a network, as teachers naturally shape the experience to their own needs. One example of this is the School Renewal Network, in which teachers who had successfully created a dynamic community within their own school found very little motivation to use the electronic network that was supplied to connect them to the "invisible college" (Walters, 1991).

In addition, a high degree of university involvement usually means that network attempts are intensively supported with equipment, technical advisors, moderators and other educational assistance. Since these kinds of support are almost always short term, it is difficult to assess the ways in which the networks might function without them.

Project Time Frames

Another observation is that most of the networks had a relatively short lifespan. Primarily because of the nature of funding sources, as well as educational trends, personnel turnovers, and changes in interests among the various stakeholders, networks tend to be very short-lived. LABNet is undoubtedly the longest-running effort so far, existing for nearly a decade. More frequently the networks we examined here lasted a few years. Since at least the first year is invariably filled with growing pains, troubleshooting, and the adaptation of plans to reality, it takes a significant amount of time for a network to reach equilibrium. Furthermore, such a short life span frequently does not allow enough time to learn from mistakes and institute the significant changes that seem warranted. Consequently, few networks reached a point where a clear assessment of the project was viable. Many reports focused on suggestions for the future, rather than evidence of success.

Time to Participate

Many studies (*Education Week*, 1998; U.S. Congress Office of Technology Assessment, 1995) have revealed the difficulty of simply getting teachers to actively participate in CMC networks of which they are a part. We should hardly be surprised that the incremental, time-consuming work of creating and participating in reflective discourse community occurs so rarely. Teachers cite a lack of available time as a primary reason for foregoing on-line communication. This problem must be addressed before it is reasonable to expect that reflective discourse communities can be effectively supported.

Project Goals

An inherent problem, again related to funding realities, is that there is always pressure to validate financial and time commitments by the creation of products. Indeed, a significant part of any funding proposal is the definition of deliverables. Teacher reflection, by its nature, is not disposed to produce satisfyingly immediate and visible products. The development of teacher reflective discourse communities in electronic contexts demands significant amounts of funding, with little to show for it in traditional terms. Results from such incremental and internal work can be shown, but it takes care and effort and new ways of thinking about products, which may not be comfortable for funding agencies. It also requires the development of a research base that supports the effects of this type of teacher development.

Conclusions

Thus far we have discussed our findings about electronic networks designed for professional development among in-service teachers. To summarize, we found that the interest in development of computer networks for teachers resulted from two considerations: 1) CMC technologies can transcend time and space to bring together teachers who may not be able to communicate with each other in face-to-face situations, and 2) the nature of CMC technologies may enhance reflections and community-building among teachers. Many networks pursued the goal of building learning and reflective communities of teachers. Much has been expected out of electronic teacher networks, both as a practical solution to the stubborn problems in teacher professional development and as a new agent to create what is difficult to

realize in face-to-face situations. However, we found a general lack of rigorous research on these networks. Little is known about their effectiveness for teacher learning. Few researchers seriously examined the degree to which the networks indeed were "communities" that promoted "reflective discourse."

Before we discuss the implications of our findings, we want to remind the reader that our results should be interpreted with caution . We only had access to published research articles, project reports, and other documents about the networks instead of the activities or archives of the networks. In other words, it was the literature about the networks, not the networks themselves that we examined. Because the literature about the networks was in many cases written by project leaders and close participants, we hope it is a faithful, albeit incomplete, representation of the networks themselves.

We now turn to two issues highlighted by the study findings. First, it seems evident that claims about the power of CMC technology to create "reflective communities" for teachers have not been well-supported by systematic empirical evidence, although o a theoretical level these claims seem logical and reasonable.There is also plenty of anecdotal evidence of the benefits of electronic networks for teachers (see for example U.S. Congress Office of Technology Assessment, 1995). This finding suggests that more rigorous research is needed to help assess the impact of CMC for teacher professional development. Future research should take into consideration the following questions:

- Is CMC an effective way to develop communities of teachers? Perhaps its real value lies in information sharing, or just as a way to facilitate communities already in existence in face-to-face settings.

- What benefits do teachers receive from participating in electronic networks? Do teachers really feel the need for "communities" and "reflection?" It is likely that we may first need to convince teachers that they need "communities" and "reflection" in order to improve their practice.

- How (if at all) do different CMC technologies affect the development of networks? CMC technologies vary a great deal among hemselves, from simple text-based asynchronous communication tools to sophisticated multimedia communication environments. Their different features have been found to affect online communication patterns (Zhao, et. al, 2000). It is possible that some technologies are better suited for supporting community building and reflection than others.

Secondly, the study shows that although much has been written about the teacher networks, a very limited portion of this literature is in the form of published research. This finding is consistent with Blanton, Moorman, and Trathen's (1998) finding about the use of telecommunications in teacher education. It points out a lack of theoretical framework and sound methodology in efforts to understand this relatively new phenomenon. So far most of the studies have been descriptions of the design and implementation of networks, or a priori arguments for CMC's potential benefits for teacher professional development. The evaluative studies relied mostly on surface features, such as number of participants, number of messages/turns, or simple topic/thread counts, and anecdotal evidence, such as selected comments by

participants. Future research should seek to develop new theories or connections to existing ones in teacher learning, social networks, communication, and human-computer interaction. More diverse and rigorous research methods should take priority in future investigations. For instance, researchers could take an ecological perspective (Nardi & O'Day, 1990) toward teacher networks: viewing a teacher's life as an ecological system, one can could think about CMC technology and its associated practices as new species. This theoretical framework would lead the researcher to a number of questions that might provide a deeper and more comprehensive understanding of the phenomenon:

- Is the teacher currently satisfied with his or her professional practices, both pedagogically and socially? (Is the teacher's ecology functional?)
- How does CMC or the teacher network help make the teacher better? (How do they help make the ecology more functional?)

To what extent might the teacher network disturb the teachers' current pedagogical and/or social situation? (How may the teacher network compete with other species in the ecology?)

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About CIERA

The Center for the Improvement of Early Reading Achievement (CIERA) is the national center for research on early reading and represents a consortium of educators in five universities (University of Michigan, University of Virginia, and Michigan State University with University of Southern California and University of Minnesota), teacher educators, teachers, publishers of texts, tests, and technology, professional organizations, and schools and school districts across the United States. CIERA is supported under the Educational Research and Development Centers Program, PR/Award Number R305R70004, as administered by the Office of Educational Research and Improvement, U.S. Department of Education.

Mission. CIERA's mission is to improve the reading achievement of America's children by generating and disseminating theoretical, empirical, and practical solutions to persistent problems in the learning and teaching of beginning reading.

CIERA Research Model

The model that underlies CIERA's efforts acknowledges many influences on children's reading acquisition. The multiple influences on children's early reading acquisition can be represented in three successive layers, each yielding an area of inquiry of the CIERA scope of work. These three areas of inquiry each present a set of persistent problems in the learning and teaching of beginning reading:

CIERA INQUIRY 1
Readers and Texts

Characteristics of readers and texts and their relationship to early reading achievement. What are the characteristics of readers and texts that have the greatest influence on early success in reading? How can children's existing knowledge and classroom environments enhance the factors that make for success?

CIERA INQUIRY 2
Home and School

Home and school effects on early reading achievement. How do the contexts of homes, communities, classrooms, and schools support high levels of reading achievement among primary-level children? How can these contexts be enhanced to ensure high levels of reading achievement for all children?

CIERA INQUIRY 3
Policy and Profession

Policy and professional effects on early reading achievement. How can new teachers be initiated into the profession and experienced teachers be provided with the knowledge and dispositions to teach young children to read well? How do policies at all levels support or detract from providing all children with access to high levels of reading instruction?

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CIERA
Center for the Improvement of Early Reading Achievement

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